

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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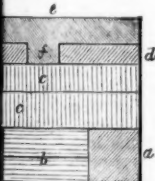
MINES AND WORKS OF GERMANY—No. IX. STATE IRONWORKS IN SAXONY.

described in our last the furnace operations at Marienhütte, Bessemer process of conversion into steel as there practised—now follow the ingots to their destination. The moulding of the Bessemer steel are made of strong cast-iron, about 12 in. square at the lower end, and 9 in. at the upper, are open, but during casting the moulds stand on flat plates which, by rapidly abstracting the heat, and thus solidifying the portions of molten metal poured in, prevent any escape of the crevices. Each casting-box is furnished at the top with a crane, soon after casting, it is raised a foot or so from the means of a crane, and then, with a few blows from a solid ingot drops out, and is allowed to cool. The hydraulic press now so much employed in the largest Bessemer works is not used here. After being heated again in a reverberatory furnace, these ingots are run on trolleys to the huge steam-hammer. This machine is the leviathan of its kind; next to Krupp's to be the largest in Germany. There are in this country two at Sheffield, and some at the Barrow Hematite Works, comparable to it. The head weighs about 7 tons (English), said to be 350-horse power. The ingot of steel is here compressed and hardened, being handled by three men with the cuspid of tongs swung in chains from a sliding pulley, which, along the front of the hammer, admitting of the workmen the ingot with precision, and turning it into any required shape.

We next followed the compressed and elongated steel bars. Here it was "boated" down in the ordinary fashion of steel about 2½ in. by 1 in. of a peculiar T-shape. And attention was called to a peculiarity of the manufacture of Marienhütte rails, which, though not a patent, is not adopted in the neighbouring States of Germany. Having adjourned at 12 noon, we proceeded to a convenient café for refreshment, which may be rendered into the equivalent English "bitter," we examined and copied the sections of rails, &c., and then the inspection.

Steel bars are cut into convenient lengths of some 6 ft. At the time similar lengths of different sorts of iron, rolled in portion of the works, are brought, and these lengths are laid out in the following order; which will be best understood from an inspection of the following section of the pack. In the pack as thus made up the vital point is the tongue of steel, *f*, above referred to as short stem of the T-shaped bars, which goes into the body of the pack, and more effectually secures the cohesion of the whole. The pack thus arranged is heated to incipient welding, and then rolled down into rails of the form shown in the accompanying section. At the points marked *a*, the better nature of the metal could be distinctly discerned in the fresh-cut section, as below. The advantages of this process were fully dilated on by the Bessemer manager. They were chiefly the economy of the strengthening of those parts, *a, a, a*, to wear; and the greater homogeneity of the portions of the pack, *d, d*, of the steel, of best malleable iron. This has been practised for six years at these works, and is highly thought of in Saxony; 12 are kept employed in heating the packs. When rolled, are cut into suitable lengths by a circular saw whilst hot; 100 tons of rails are turned out weekly. These are loaded in the railway trucks, and sent off principally to the State railway descriptions of rails, wholly or partially of steel, are used. One novel variety we were much struck with, it is of steel and reversible, its section much resembling a T. The rails were intended for a tramway.

At Marienhütte gas furnaces were in operation, built in groups of three. The gas generator is four or five yards away from the furnace, and the inflammable matters are conveyed in iron pipes of 2 ft. diameter, and by means of suitably arranged bridges furnace flue, the flame is made to impinge on the sole of the hearth. In a neighbouring works that we visited, where the furnaces are also used, the gas generator was 200 yards from the furnaces, and the arrangement appeared to work to avoid the loss of heat by radiation in this long distance, the inflammable gases were passed underground to the generating apparatus and covered with brickwork. The parts themselves were below the level of the works, admitting the back being tipped into hoppers on the ground floor, from the fuel gradually dropped into the retorts below. The Bessemer well of these Siemens' furnaces, and especially of uniformity. There seems to us room for an important improvement in these arrangements, at all events with some kinds of that is, we think it would be worth while to fix in the iron conveying the gases from the retorts, an apparatus similar to the chloride of calcium tube used in the laboratory for gases, which would arrest and retain in combination the gas given off by the coal. No difficulty would be experienced in the apparatus, through a door in the tubing, and re-absorbent when saturated. Many coal measures, both in Saxony and England, are not utilised by the ironworks on account of the large proportion of sulphur. Indeed, in this works, the proportion of sulphur in the iron often exceeds 19 per cent., due mainly to the inferior character of the fuel. There is no doubt that in the present and prospective coal famine an invention that would prevent these inferior measures to be consumed, though only in the department of gas manufacture, would be a commercial boon of primary interest.



Though steel rails form the chief output at Marienhütte, a large quantity of other iron work is produced. Wrought-iron girders are got up for bridges, &c., to an average quantity of 15 tons per week; and merchant bars, plates, pipes, tanks, and machinery castings, to the extent of about 50 tons per week. They work five days, or 10 turns of 12 hours each, including two hours each turn for meals, which in the daytime are at 8, 12, and 4. The week commences, as in most English forges, on Monday evening. There are 1750 workmen employed here, exclusive of the furnace hands. The wages paid were mostly arranged by the ton, and therefore vary with the skill and industry of the artisan; but for those who received day wages we found they were—for men 2½ gulden, boys 2 to 1½ gulden per day. No women are here employed, except a few (about 40) in the lighter work of the blast furnaces, nor any boys under 14. The State regulations for juvenile labour in Saxony require that all children between the ages of 6 and 14 years shall attend school, or be instructed to the satisfaction of the inspector at home. And from the Government statistics we see there is but a discrepancy of 4 per cent. between the total number of children in the kingdom and the total number returned as actually attending school. In this respect Saxony takes the lead of every State in Europe.

FOREIGN MINING AND METALLURGY.

It appears from official tables published by the Customs administration of the Zollverein that the importation of coal and coke into the States of the German Customs Union amounted in 1871 to 4,790,144 tons, or 1,426,993 tons more than in 1870, and 350,000 tons less than in 1869. Great Britain figures in the imports of 1871 for 3,999,851 tons, of which 2,177,320 tons were introduced by the Baltic ports, and 922,531 tons via Hamburg. Belgium imported 675,569 tons; Austria, 274,749 tons; the Low Countries, 46,697 tons; and Switzerland, 19,397 tons. The importation of coal into the Zollverein, which between 1862 and 1866 averaged only 1,418,671 tons per annum, increased in the period embraced between 1867 and 1871 to an average of 3,553,427 tons per annum. The exports of coal from the Zollverein amounted in 1871 to 3,399,384 tons, or 615,418 tons less than in 1870. This reduction is attributed to the development of German industry, which absorbed in 1871 a much more considerable quantity of coal than in former years. The quantities of coal exported from the Zollverein last year may be summed up as follows:—Austria, 3,016,167 tons; the Low Countries, 2,153,970 tons; France, 1,288,121 tons; Russia, 566,701 tons; Bremen, 217,013 tons; and Switzerland, 41,246 tons. The mines of Prussia participated in these exports for 6,400,000 tons; those of Bavaria for 370,248 tons; those of Saxony for 338,897 tons; and those of the Grand Duchy of Baden, for 140,544 tons. As regards the consumption of coal in the Zollverein it was estimated to amount in 1871 to 55,890,760 tons. This total exceeded the corresponding figures for 1869 by about 6,600,000 tons.

Pig has been advancing in Belgium, and this circumstance is accepted as an indication of a probable general maintenance of prices in the Belgian iron trade. Refining pig brings 6½ 8s. per ton in the Charleroi basin; this quotation is not universal, but while it was exceptional a few days since it is now rapidly becoming general. Casting pig has been in somewhat less demand in Belgium, although a similar report cannot be made with respect to the French markets; prices are, nevertheless, supported with firmness at 7½ 8s. per ton on an average. Merchants' iron is dealt in at 12½ 16s. per ton; sheets have a decided tendency to exceed their previous quotation of 16½ per ton; plates are well maintained. As regards contracts for rails, opinions are as divergent as prices, and it is very difficult to give a precise quotation. There appears, however, to be a general concurrence of opinion upon one point—that the ensuing season will be a good one. The Liège and Limbourg Railway Company has invited tenders for the sale of old rails; the offers made ranged between 7½ 8s. per ton, proposed by M. Strybos, and 8½ 5s. per ton, proposed by Messrs. Norrington, Pitts, and Co., of London. On these terms the remanufacture of old rails can be carried on upon advantageous conditions. It appears that the imports of iron of various kinds into Belgium in the first eleven months of last year amounted to 138,500 tons, against 83,500 tons in the corresponding period of 1871; November figured in last year's total for 9600 tons, against 4700 tons in November, 1871. The imports of rails into Belgium in the first eleven months of last year amounted to 5500 tons, of which 4000 tons came from Germany and 1000 tons from England. The exports of iron of all kinds from Belgium, which had been 238,000 tons in the first eleven months of 1871, rose during the same period of 1872 to 265,000 tons. The exports to England increased last year 12,000 tons; those to France, 6000 tons; and those to the United States, 7000 tons. On the other hand, the exports to the Zollverein fell off 17,000 tons last year; the deliveries of pig and plates presented a rather sensible augmentation, but as regards rails there was a diminution of 23,000 tons, or thereabouts. The exports to Russia fell off last year 6000 tons, the reduction occurring principally in rough pig and rolled iron. Upon the whole, the results attained last year may be said to have been less brilliant than the Belgian iron trade had a right to expect. The Bonne Espérance and Batterie Collieries Company will pay to-day (Saturday) a second dividend for 1872, or 1½ per share.

The French iron trade presents less animation, although the aspect of affairs is still favourable. Prices remain generally unaltered; coke-made iron stands at 13½ 12s. to 14½ per ton. The fair held at Besançon presented comparatively little activity, confidence not being generally felt as to the future, while opinions varied a good deal as to the probable future course of prices. The imports of pig-iron and castings into France in 1872 amounted to 133,000 tons, against 116,000 tons in 1871. The augmentation observable occurred principally in the imports made with payment of duty. As regards iron and plates, the results disclosed by the official statistics of last year are analogous, the total imports having risen to 45,000 tons in 1872, as compared with 26,000 tons in 1871. The imports of engines and machinery paying duty rose last year to 42,000 tons, as compared with 23,000 tons in the corresponding period of 1871. Altogether, the total augmentation in the importation of iron of various kinds into France last year amounted to about 55,000 tons. The exports of iron from France increased to a much more considerable extent

last year, having been 288,000 tons in 1872, against 150,000 tons in 1871. The largest proportion of the increase observable in last year's figures occurred in the direct exports, which amounted last year to 177,000 tons, against 96,000 tons in 1871. These figures show a great increase in the activity of the French iron trade last year, and a very large balance also in favour of the exports.

The greatest firmness in prices may be reported as regards the Belgian coal basins, in which there are scarcely any stocks. The insufficient production of coal in Belgium has, indeed, induced the proprietors of sundry local works to endeavour to obtain supplies of coal abroad. It is to the Ruhr basin that orders of this kind are being sent. Contracts have just been let for the supply of coal to the Belgian State Railways during April, May, and June, 1873. The contracts given out appear to have been let at an average of 2s. 3½d. per ton. The exports of coal from Belgium in November, 1872, amounted to 353,383 tons, the aggregate exports for the eleven months ending Nov. 30 last year having been 4,264,566 tons. This total showed an increase of 1,283,912 tons, as compared with the corresponding period of 1870, and one of 933,340 tons, as compared with the corresponding period of 1871. The exports of coke from Belgium in November amounted to 57,555 tons, the deliveries being about equally divided between France and the Zollverein. The imports of coal into Belgium in November amounted to 32,360 tons, while those of coke were 968 tons.

In the French Coal Trade prices have presented little change, although domestic qualities have shown some little weakness. An emigration which has set in of Belgian coalminers to German brick-yards has occasioned some apprehensions, which are reflected in an upward tendency in prices in the Nord and the Pas-de-Calais. The intelligence received from the basin of the Loire is generally favourable. M. Des Rotours and some other members of the French National Assembly have proposed that an official enquiry shall be made into the state of French coal mining industry, so that the production may be developed in proportion to the requirements of consumption. The proposal has been referred to what is termed the Commission of Parliamentary Initiative. It is more than probable that a Bill which has been introduced into the French National Assembly for regulating the employment of women and children in mines will become law by a decree of the President of the Republic. M. Larmanjat has been authorised to lay down a railway on the towing-path of the Burgundy Canal for the trial of his system of small locomotives, weighing 4 tons, running upon one rail, and to be used in towing canal boats.

Copper has been rather neglected at Paris; Chilian in bars has made 92½; ditto in ingots, 96½; tough English, 93½; and Corocoro minerals, pure standard, 93½ per ton. There has been rather more passing in copper at Marseilles, but prices have experienced little change. The German copper markets have continued quiet. Tin has shown some weakness in Holland, notwithstanding the tone of the London market; this weakness is attributable to considerable supplies. Banca has been dealt in at Rotterdam at 85 fl., and Billiton at 83 fl. Upon the Paris market tin has regained a little more favour, Banca, delivered at Havre or Paris, making 150½; Straits, with similar delivery, 151½; and English, delivered at Havre or Rouen, 150½ per ton. Tin has attracted less attention in Germany, and prices have slightly given way upon the German markets. Lead has been quiet upon the Paris market, French, delivered at Paris, making 22½ 12s.; Spanish, delivered at Havre, 22½ 16s.; English, ditto, 23½; and Belgian and German, delivered at Paris, 22½ 16s. per ton. In Germany there has been some activity in lead, but prices have not sensibly varied. Zinc has continued quiet upon the Paris market; Silesian, delivered at Havre, has brought 26½ 12s.; and other good marks, delivered at Havre, 26½ per ton. At Breslau the price of zinc has been firmly maintained, but with very little business doing; the Berlin zinc market has been rising; and at Hamburg affairs have also been active.

COSTA RICA.

Sir,—My object was to visit the Republic of Costa Rica, and I embarked at Panama, in one of the Panama Railroad Company's steamers for the Port of Puntarenas. These steamers are very comfortable, and from 2000 to 2500 tons burthen, and sail every ten days. The steamer runs along the coast, which is nearly all the time visible, and you pass a great many islands. The scenery is most beautiful, the sea generally calm, and is rightly called the Pacific Ocean. The heat on this trip is very great.

Puntarenas is about 480 miles distant from Panama, and is reached in about 48 to 52 hours. In former times the landing was very disagreeable, and rather dangerous, on account of a sand bar near the entrance of the harbour, where, when the water was low, the breakers ran very high, and these had to be passed with some difficulty, for many times the boats have been swamped, and some of the passengers and crew lost. Now, however, a wharf has been built, which avoids going round the point, at a saving of four miles. Puntarenas is situated on a peninsula, and is really what its name expresses—a sandy point. There are a few good houses and stores in the place belonging to the merchants, but most of the dwellings of the inhabitants are merely huts made of wood and cane.

An old Spaniard keeps the hotel there, which, as is usual in most Spanish places, is very dirty, but the old fellow sets an excellent table, and always treats his guests with oysters, which are very fine here. He serves them up raw, fried, and stewed, and they are really a great treat. These oysters grow on trees, as most of the oysters in the West Indies and in Central American ports do. The mangrove trees grow near the water's edge, their branches touch the sea, and the oysters cling to these branches, which the fishermen cut off, and then bring them branches and all for sale to the port, where they are sold for a few shillings per thousand.

Puntarenas during the coffee season is a very busy place, as daily some 200 to 300 carts laden with coffee arrive from the interior, and return with the imported goods.

As soon as we had procured our mules we prepared to continue our trip to the capital, San José, distant about 80 miles from the port. The ride from Puntarenas to the next resting place, Esparza, takes about four hours, and is a very pleasant one, through a dense forest of magnificent large trees, and the tropical vegetation is most splendid and beautiful. After passing the River Barrancas you

commence ascending the mountain till you reach the village of Esparza, situate on a kind of plateau, about 1000 ft. above the level of the sea. The next stopping place is the village of San Mateo, 18 or 20 miles further on. The scenery on the whole road is magnificent, and such as is only seen in tropical climates.

Leaving San Mateo you commence ascending the Aguacate Mountain, a mountain rich beyond description in gold and silver, which are buried in the bowels of the earth, and I believe that there is no country in the world where the gold mines are equal to these in permanency and richness of the lodes, which are all well defined here, as in those of Circulitas. Ascending this mountain I found the road macadamised with gold and silver bearing quartz, which the labourers had taken from the sides of the mountain, so that you can really say that the roads were paved with gold. Most of the rich families in San José owe their riches to the mines of Circulitas and those in the Aguacate Mountain. But let me remark here that if the ores had been worked in a scientific manner the result would not have been less than a production of 40 millions of dollars from these mines alone, as it is a well-known fact that the Costa Rica miners lose at least three-fourths of the gold the ores contain. The quartz from these mines has given the extraordinary result by assay of 4000% to 5000% per ton, and when the mines were worked by the former proprietors they often found ores of such richness. A specimen of this ore 2 cubic feet large is now deposited in the British Museum, where it can be seen, and gave over 4000% per ton by assay.

The Costa Rica people, however, are mostly agriculturists and merchants, and do not understand much of mining; and as soon as it became necessary to employ machinery or make tunnels the work was generally abandoned. The lodes in the Circulitas district are all well defined, and generally from 3 to 6 ft. in width, and there is no spot in these mines where the ores do not yield from 12% to 16% per ton. My opinion is that now these rich mines are to be worked by an English company—the Costa Rica Gold Mining Company—the results that will be obtained will not only make that company one of the richest in the world, but will even astonish the miners of some of the richest gold diggings in Australia and California.

The view from the Aguacate Mountain is one of the finest you can have, as you see the Pacific Ocean at a distance, can observe the vessels entering the port of Puntarenas, and see the different villages at the foot of the mountain. The mountain is about 4000 ft. high, and the road from Puntarenas is an ascending and descending one, with a gradual ascent, and it seems as if the persons who planned this road had tried to find the steepest possible ascent they could, as there is no doubt that a shorter and better road might have been made to the capital.

The next place you come to is called Atenas, another small village, and from here you again go ascending and descending till you reach the planes of San José, in the neighbourhood of which you find a great many coffee estates, which, when in flower, sent the whole air with a most delicious perfume. At last San José is reached, about which I shall talk in a later communication.

TRAVELLER.

INVESTMENTS IN WESTERN AMERICA.

SIR.—It would be well that English capitalists should form a correct estimate of the difficulty of making good investments in Californian mines. In San Francisco there are a great number of very speculative capitalists who are ready to take up promising enterprises. These gentlemen are in close friendship with the most experienced experts, who do not fail to bring under their notice the best properties on sale. It is difficult, if not impossible, to pay a first-rate judge of mining property for his report in cash, and it is far more commonly arranged that the expert takes his remuneration partly, if not altogether, in prospective results. When a mine is sold in England the expert loses this advantage, and it is pretty certain that the very best properties are never presented to the English market. It may be laid down that whenever a Californian mine on the San Francisco Stock Exchange is proposed to be transferred there is something wrong about it. This remark also applies, though in a less degree, to private associations, for such associations rarely, if ever, fail from want of capital, if the mine be really good, though they do fail occasionally from want of harmony amongst the partners.

Nor is it easy to rely upon the reports of foreign experts, however able or honest they may be. The reports of such men are, no doubt, valuable, but it appears to me they have rarely embraced a description of the market value of the properties reported on. They generally contain a full description of the property, the amount of ore in sight, the estimated output, cost of working, &c., but these alone give a very delusive idea of what the property is worth. People here have no conception whatever of what cash will buy in California or Utah, or they would never consent to the formation of mining companies with such a huge amount of capital as the Emma for example: 20,000,000 will really buy a very handsome mine, and I scarcely believe there is a really good purchasable mine which could not be bought for 50,000,000. At this moment so scarce is capital in Salt Lake that people are ready to sell anything they have. But it may be well to quote a case or two of failure from the neglect of enquiry into market value. I was informed by the original proprietor of Mineral Hill that he sold it shortly before it was brought to England for 16,000,000. He said it was a very pretty looking property, but that he sold it because he had no faith in its permanence. He is one of the best judges of a mine on the Pacific Coast, and I can scarcely think he would have sold it for less than the market value. I do not know all the circumstances connected with that unfortunate speculation, but I venture to ask whether any common-sense man of business would not have enquired into the history of the property, and have obtained an opinion, which I was assured was as open to him as to me? Again, a gentleman in Virginia City told me that he had the opportunity of buying the celebrated Eberhardt for about 800,000, and if similar enquiries were made into the history of many other mines it would be found that dollars have been converted into pounds as the property passes from native into English hands.

Notwithstanding these circumstances, there is yet a wide margin left for English investment. The capital of California rests in but a few hands, and is small indeed as compared with what is wanted for the development of the country. There are millions of acres of auriferous gravel, and nothing is more certain than the return of hydraulic gold mines, yet no one in California thinks of investing unless he can calculate on 1½ per cent. a month, and the return of all his capital in four years. Much less than this would probably satisfy an English investor, and he has no occasion to consult experts on a matter patent to any man of common sense. As regards quartz mines, the case is different. No one can tell what they are going to cost before any return is gained, and the Californians have failed quite as often as any other people. This is only what might have been expected, for the whole nation is imbued with the gambling spirit. They earn money fast, and they invest without consideration. It was a remarkable fact that of 123 mines on the San Francisco market, all professing to pay monthly dividends, there was only one mine which actually paid a dividend in October last, when I was there. That mine was the celebrated Raymond and Ely, in Pioche, which paid more than 120,000,000 in the course of last year. As regards silver mines, those in Nevada are scarcely likely to pay English investors. They depend for their success chiefly on judicious and economical management. Even on the Comstock lode the value of the ore varies so much that it becomes a question of the nicest judgment whether it should be raised to the surface or left behind untouched. The position of the Utah mines is, in my opinion, far better than the mines of Nevada and California. There are fewer capitalists, and more mines. In California and Nevada the people were first miners, and agriculture has been grafted on mining operations. But in Utah the first settlers were agriculturists, and they still form the majority. This gives the miners the great advantage of a cheap supply of all the necessities of life. In some districts in Virginia City corn, beef, mutton, wood—and, indeed, nearly every article of first necessity—has to be imported from a distance, but in Utah all are close at hand and cheap.

My first conclusion is that there is no safety whatever in purchasing mines on the reports of experts only, and that it is of the highest importance that the price asked for any mine should be compared

with what it would command in the market close at hand. This is not by any means the only point of consequence, but the others must be left until another week.

TRAVELLER.

MINING MACHINERY—THE PRIZE ESSAY.

SIR.—I understand the Essay on best Mining Machinery, for which a premium of 20% had been offered, was in the hands of the Editor of the *Mining Journal*, but the announcement of the successful competitor coming from one of your special correspondents would indicate that it is confined to a privileged circle in Cornwall—may be the Miners' Association; for if the result is so extensively known through Cornwall may not the report, hints, and floating rumours, always rife in that part of the country, have materially assisted the gentlemen in coming to a clearly-defined notion of what would answer the purpose, or fit their Lecturer's views (I believe one of the judges is the lecturer or secretary of the Miners' Association). I do not suggest that the persons named in your correspondent's note are not the proper persons to receive the award, but I think it bad taste (to say the least) in allowing the result of their decision to be made public through any channel but by a note or paragraph from the Editor, whose sole charge and by whom the money is to be paid; or a note from the judges, commenting on and encouraging any other that may have been worth a notice or a remark. I have been watching for the result of this competition, which will, no doubt, awaken much discussion, and good may come out of it, but if your correspondent has its management, I think he should have forwarded the successful essay for publication, with the encomiums on his friends. If my recollection serves me, it was stated the whole of the essays would be put in your hands, and what was fitting for your columns would be inserted for public criticism.

May I ask, through your valuable Journal—1. Have the essays been all received by you?—2. Will more than the one successful essay find a place in your columns?—3. Are we to look for further comments on the rejected essays from the judges or your Cornish correspondent?—4. Would the essays be returned if not noticed in the Journal by forwarding the postage for same.

JOHN MARKHAM.

Lancashire, Feb. 25. We had received the Essay, but the publication was deferred until this week, owing to the great pressure upon our space; and with regard to our Cornish Correspondent having had anything to do with the award of the premium, or having exercised any influence in the matter, we have no hesitation in holding him blameless. The notice in his letter was unquestionably as a mere matter of news, and, therefore, properly inserted. We publish this letter as evidence of the feeling which may exist where everything has been most fair and bona fide. The whole of the essays will be placed in our hands, and we shall at least make selections from each.]

ECONOMISING COAL IN STEAM-BOILERS.

SIR.—To all who are interested in mines, or manufactures where coal is largely used, the question of its present cost is of paramount importance; and if you will allow me to address the public through the *Mining Journal* a saving may result.

I am a West Country brewer, and a shareholder in many mines, both progressive and dividend, and have observed that the present high prices of coal in London has had the effect of lowering quotations in Cornish and Welsh mines. I am glad to say that prices for Welsh small steam coal have not advanced within the last two months; in fact, I now pay 18s. per ton, delivered in Somerset, whereas 23s. was at one time the price for the same quality. This kind of coal is mostly used in Cornish boilers, which work the pumping engines, and may be said to be almost double the price of former years.

This advance has induced me to look about for means of economising as far as possible, and I am able to say I have been successful in obtaining a substance with which to cover my boilers, and thus save a considerable percentage upon my coal bill. I can now damp my fires at 9 P.M., when steam is about 30 lbs. pressure, and upon resuming work at 6 A.M. the loss of steam is less than 5 lbs. In fact, it often happens that no loss is apparent. Its cost is 7½ p. ton, and 4 cwt. has proved enough to cover a boiler 15 ft. by 5 ft. 3 in., so that price is no great objection to its general use.

If any manager wishes to try its effect I should be pleased to inform him of all particulars if he thinks it worth while to address me at your office. I would willingly give the manufacturer's name and address, only it would look too much like an unpaid for advertisement. I shall, however, take care to acquaint the managers with whom I am connected with my experience, and if they are anxious to do their best for their long-suffering shareholders I am sure they will at once endeavour to save coal when the manner of so doing is plainly shown.

I can now keep my hand upon my boiler when steam is at 40 lbs. pressure, which fact is sufficient to show the astonishing non-conducting powers of the substance, and must convince the least astute of the saving effected.

I have no interest in its sale, but am an earnest opponent of waste in any shape or form, especially in the matter of coal.

Feb. 24

SAVE ALL.

PURIFICATION OF IRON.

SIR.—The present exorbitant price of coal renders it more than ever desirable that the utmost efforts should be made to economise fuel in the manufacture of iron, and the process recently invented by Mr. David Joy, of Saltburn-by-the-Sea, appears to me to be decidedly a step in the right direction, for the effect will be (at least I believe so) to obtain such a high quality of pig metal that the cost of its subsequent manipulation will be materially reduced, and when the invention is used in the puddling furnace I should think a very fine quality of metal would result.

The efficiency of the Giffard injector for feeding boilers is already well known, and Mr. Joy proposes to employ a similar form of instrument for removing the slag from molten metal; his invention consists in drawing or carrying away the contents of the furnace, or a part of them, by an induced or direct current or blast, and in producing the induced current he employs a simple form of injector, which is placed over or near the runner of slag or metal in such a position as to receive it as it runs from the furnace, and he employs a direct current when it is required to remove slag only from the furnace, using guide plates or pipes around the current to guide or deflect the slag as required.

Now, it appears to me that by regulating the length of time during which the injector is kept in action it would be possible to vary the character of the resulting metal very considerably, and by first using the injector to blow away the slag and then to blow the metal itself, the operator might obtain almost the same advantage as in the Bessemer process, and produce all qualities of metal from the best steely iron to that closely approximating wrought-iron. Of course, it would be necessary to know the character of the ore operated upon within reasonable limits, but this, at present, is not difficult.

Feb. 24.

J. D. F.

DYNAMITE—MCKEAN'S ROCK-DRILL.

SIR.—I hasten to endorse every word contained in the letter of your correspondent, "A Practical Man," relative to Dynamite, in the Supplement to last week's Journal. My only regret is that he did not sign his name to his most thoroughly practical and sensible letter, and I beg you will put my name and address in full at the close of this. Anything more stupid than the Metalliferous Mines Regulation Bill and the Nitroglycerine Act cannot possibly be conceived, barring the obstinate stupidity of the railway companies in refusing to carry Dynamite. I have had within the last few days to send my coachman with a spring cart from my place, 10 miles out of Richmond, all the way to Newcastle, by the road, to fetch 5 cwt. of Dynamite—that is, six days' work—because the North Eastern Railway refuse to take it to Richmond! I have already spoken to several members of Parliament about it, and hope ere long to raise such a storm about the ears of these new tyrants that they will be compelled to rescind their absurd regulations. It is a scandalous shame that important industries should thus be impeded by idiotic legislation and tyrannical railway directors.

I avail myself of this opportunity to state that, "as a practical

miner," I can vouch that the McKean rock-drill has not been superseded by another drill which arrogates to itself the victory over all other drills weekly in your columns. I have used the McKean rock-drill for three years, and do not hesitate to say that, in my humble opinion, it will beat all others clean out of the field in the long; not that it has done so, but it will do it. To all those who have long levels to drive, and plenty of water-power to work the air-compressor, I can with the utmost confidence recommend McKean and Co.'s drill.

GEO. WM. DENYS, Esq.

Draycott Hall, Richmond, Yorkshire, Feb. 25.

THE LAW OF METALLIC DEPOSITS.

SIR.—What is in a name? Enormous sums of money have been lost in exploring districts in search of supposed lodes. In Australia the Burra Mine was a carbona and not a regular lode. Neither was the deposit of copper in the Eton Mountain, in Staffordshire, the deposit of copper found originally in the two mines in the Island of Anglesey, although enormous explorations from time to time having been made without any practical success. The Llangynog Mine, in Montgomeryshire, was a like deposit. The Devon Consols deposits may be termed regular lodes, but did not extend much beyond two miles in length of a productive character. The Great Wheal Vor lodes were never found to be productive beyond two miles in length, neither could they be traced east or west beyond that distance. The East Wheal Rose Lead Mine was of a much like deposit, and West Chiverton is much the same. Lode form junctions in certain basins generally, and make large deposits. Such was the case with vast deposits of minerals discovered in various basins at the base of hills in Cornwall. All explored districts prove that when lodes enter a change of strata they generally give up into a number of branches, and so end the productiveness of these veins. The great deposits of copper discovered about 40 years ago in the Santiago and Cobre Mines, in the Island of Cuba, did not extend beyond two miles in length. The Great Wheal Affric and Alfred Consols Mines, in Cornwall, yielded large quantities of copper ore, being one and the same lode for about two miles in length. The greatest deposits of tin, copper, and lead ores have been found in basins generally, the bearing lodes being parallel to each other. The hematite iron ore lodes in Cornwall appear to be of a more masterly description of veins, and in certain districts extend for miles in length; but the vast deposits of iron ore found in the limestone formation in Lancashire, Cumberland, and other districts in the North of England, are generally found in beds, or so termed pockets.

The greatest deposits of coal are generally found in basins, but not so vertical as metallic veins; these deposits are wisely intersected by faults, and at the intersections throw or heave the one either up or down, at times for fathoms, either one way or the other, these faults no doubt, geologically speaking, act just as courses in metallic basins or districts. Coming events are so called their shadows before. Gossan near the surface in copper and lead lodes is one of the strongest indications of these minerals being found underneath, but tin is the exception. The great deposits of minerals found in hills are the evidence of some volcanic agency, consequently very uncertain as to extent either in length or depth. Carbonates of minerals found in basins, or valleys, at the foot of hills, may be considered very treacherous and uncertain deposits, and these deposits are not unfrequently found in the shape of an egg. The centre of all great deposits are found at the widest part of the so-called vein, and when it begins to narrow the portion of the deposit is passed in nine cases out of ten. Such, from experience, has been found to be Nature's laws; but the public run away with the notion that where much is found much more may be found, that is the speculative part of the business, and just like winning after spilt milk.—Feb. 25.

A. BERNES.

MINING IN LLANIDLOES—PEN-Y-CLYN.

SIR.—In a recent visit to Llanidloes I inspected some of the mines in that neighbourhood, one of which was Pen-y-Clyn, situated between the two now leading mines in the district—Van and the Consols—and has the same lode running through the entire set, therefore, as regards its position, it needs no remarks from me. I may, however, say it was the success that attended the working of Pen-y-Clyn about 20 years ago that induced the late Mr. Joseph Howell to take up the Van sett. The operations at Pen-y-Clyn were on the top of the hill, where the run of ore ground cropped to the surface. The present company are working the east part of the sett, nearer the Van, where they have virgin ground upwards of 400 fathoms in length on the course of the lode. A shaft has been sunk 12 fathoms below the adit level (which at this point is about 17½ fathoms deep), and is now on the north, or hard part, of the lode proved so rich to the east and west of them. Small strings or leaders of ore are to be seen in the shaft all the way down below the adit, varying from ½ in. to 2 in. in thickness, and in some parts they have opened out into bunches of solid ore. Many tons have been got out and sent to market. During the last 2 or 3 fathoms sinking the lode shows a gradual improvement, there being at the present time a solid branch of ore on the north wall from 3 to 6 in. wide, and there is every probability of it increasing as depth is attained.

Had this mine been in the market instead of private hands it should seek quoted at from 50,000,000 to 60,000,000. The proprietors should be congratulated for their perseverance, there being not the least doubt that in less than six months the returns of ore will more than meet the expenditure, when the shareholders will be handsomely rewarded for their patience and outlay.

VISITOR.

THE DELABOLE SLATE DISTRICT, CORNWALL.

SIR.—Except the agricultural productions of this district, roofing and other slates may be regarded as the staple produce. Delabole a far-famed quarry, situate in the parish of St. Teath, has been wrought for centuries; but never so extensively as at the present time. The excavation is of enormous horizontal magnitude, and is about 350 ft. deep; the waste pit and debris occupies about 100 acres. Delabole is the name of the land in which the quarry is situate, and is the property of the company, Messrs. John Allen and partners. Mr. Allen is the owner of the paper manufactory at Ivybridge, a gentleman distinguished for virtues, as well as opulence.

The present company took a lease of the property about 32 years ago, and purchased the entire freehold estate about 20 years ago for about 45,000,000. The quarry is the largest in England, and the quality of the slate is good. There are about 500 persons employed in mining and dressing the slates for all the purposes to which slate is applied. The resident manager is Mr. Wm. R. Roberts; managing director, Mr. Allen. The sub-agents and clerks are numerous. The quarry was worked previously to the present company by Messrs. Granger and Trickett, and Mr. J. R. Avery (deceased). The late named gentleman said that he made an annual profit out of it of 500,000. The machinery employed is considerable. There are steam-engines used in lifting the slate to the surface, one steam engine sawing and planing flags, one for cutting slate, and one for turning lathes, besides several steam-cranes. There is one water wheel, 40 ft. diameter, drawing water, and another, 30 ft. diameter, doing like work. The old pit is called "Clarke's Hole," from the circumstance of the late Dr. Adam Clarke's preaching there when he was in the Camelford Wesleyan circuit. Another part of the present quarry was called the "Grove Quarry," from its being situate in a grove, a few trees of which still remain, and which I saw to-day. Another part of the quarry was called "Lease work," having been leased to a party of workmen a long while ago. Another part was called the "Ash-tree Pit," from there being a very large ash-tree at the boundary fence contiguous; and another part was called the "Landwork Quarry," which is the northern extremity of the great excavation. This part is remarkable, because the landslide which occurred there on April 21, 1869, which killed 15 persons, one of whom (a female) is still buried under the rubbish. The slip was in height 150 ft., in length about 400 ft., and in width at the top nearly 150 ft. I am informed by a quarry manager that on five several days (not successive days) thirty men and one woman (all of whom he knew) were killed in this quarry. He knew the names of 100

Sir,—I observe in the *Mining Journal* of last week that it is likely the above mining property is to be re-worked forthwith, and it is only surprising to those unacquainted with the circumstances that it has not been the case long ago. I very well recollect the limited trial made here nearly 20 years since, and know the difficulties which led to the stoppage. In starting a mine, in my opinion, it is of the greatest importance to have the report of the last agent of the mine, especially when such agent's report can be relied on, and I am glad to find that Capt. John Brown has given his report in the state of the mine, and the bottom of which mine has not since been seen, and at which point the report referred to states the lode was richer than in the upper levels, showing the improving state of this main lode as it deepens. Such a report as that of Capt. Brown's I consider a guarantee for the success of the undertaking, as I know him to be a sound and practical miner, always found to be over cautious in his reports on mining properties, and a man of strict integrity, no better proof of which is the testimonial he holds from Messrs. Bolitho and Sons, barbers and gold and silver smelters, of London, who have known him for more than 20 years.

This mine, it will be seen, is only 50 fms. deep from the surface, and the levels are extended no great distance east or west of the main shaft; it, nevertheless, yielded considerable quantities of tin from the surface to the present bottom, and best of all where left off. To the best of my knowledge 11-in. lifts were used here for pumping the water, but they were not quite large enough, and the wood rods were continually breaking, so that at last they had great difficulty in completing the water level for the first time, and the mine was abandoned, or the better work of the mine it was at last given up, to the regret of some and the surprise of others. Within the last three or four years another lode has been worked by a party of small means, and without steam power, to a depth of not more than 10 fathoms

The CHAIRMAN, in moving the adoption of the reports and the balance sheet, said: I have great pleasure in presiding over this our first half-year meeting. I think that, in spite of what I said at our first meeting, we have just had is a very satisfactory one. A great deal of useful and necessary work has been done at a moderate cost, and by the course pursued I think we have got the value of £1. for every 10s. expended. Shafts have been sunk to prove the existence and some branches of tin ore of an amazing richness. I look upon this claim as the principal source of the supply of stream tin, which has made this neighbourhood so famous, and without exaggeration it may be as a large stanniferous region. We might almost with this elvan consider ourselves independent of all other sources of tin we have at least in the sett, and very promising ones. The geological formation of the tin ore to form almost close to the surface. This is a very material point, as many of the deep mines are at present seriously embarrassed by the price of coal and labour. We have it on good authority that should tin become reduced in value, of which there seems, I am glad to say, no prospect, Belowda Beacon would still become a dividend paying mine, and, therefore, I think we may satisfactory comfort in that we have here ore in abundance, and it only remains for us to reach the point of most miner-like and economical manner we can. Capt. Stephens has shown the way by the rich discovery he made on the elvan line, and I think we have a good prospect, as far as the future cost of the tin, and again a moderate cost, as our large remaining working capital in unissued shares will enable us to do.

We made it a rule to keep down the monthly cost-sheet as low as circumstances would admit, and we concentrated our efforts upon the cutting of that part of the elvan which had not been seen before. You may, perhaps, be aware that the old elvan mine, Castle-an-Dinas, where returns were returned on the first six months' working from this elvan alone. We determined principally with our friends to be responsible for the first six or seven months' working, so that we could not open up equal to our expectations. The first eight months' working has not realised, and we can now with confidence invite you to subscribe for the new issue. We do not ask a premium, though our position and prospects would justify it, but offer them at a par, payable by instalments. The vendors have offered to take a good proportion of the unissued shares through the secretary. I may here remark that the vendors still retain a very large interest, and this suggestion of their practically amounts to an offer to remit the amount they have received on account of purchase, and thus showing the estimation they place on the property. They have also deposited with the bank nearly as many a sum as they have received, and I think that the capital which has been subscribed by the Chairman concluded by moving that the agent's and directors' reports, and the balance sheet be received and adopted, and circulated among the shareholders.

Mr. JAMES CROFTS seconded the motion, which was carried unanimously.

THE SECRETARY: It is deserving of remark that while the agent's estimate of the only 7500l. will be required, we shall have nearly 30000l. remaining in unissued shares.

Mr. BOYDALL asked if the cash balance was distinct from the agent's estimate guaranteed interest?—The CHAIRMAN said the vendors for the first six months' will in the balance-sheet, as the directors restricted the amount to see that the agent's estimate was not exceeded, and the company to meet the company's expenses.

The SECRETARY read a letter from the vendors, offering in the event of the holders taking up 1000 of the new shares to provide for the remaining 500.

In answer to a question, the CHAIRMAN said he should have mentioned that the

to be done, but the directors trusted that before long they would have

the satisfaction of announcing a dividend. (Hear, hear.) He then moved that the report and balance-sheet be received and adopted.

Mr. GUTIERREZ seconded the proposition. Having visited the mine in 1871, he begged to offer a few observations on the past and what he considered the future of this property. In the prospectus, it would be recollected, their superintendent led them to anticipate dividends from the end of September last, although his co-directors with himself were not quite so sanguine as to this result being attained so early. They certainly imagined they should be in a position to begin dividends the early part of this year. Although he confessed disappointment thus far, their confidence in the ultimate success of the concern was unshaken. Their mine is on the same lode and immediately adjoins the Sierra Buttes, a property which has for many years and is now giving large profits. He saw no reason why the Independence should not prove equally as good, if not better, than its neighbour, and he would endeavour to explain why. The Sierra Buttes has three lodes, all of which concentrate in the Independence, and form one large vein. Their lode is in some places 35 ft. wide; he had panned it himself. Their mine was almost a virgin one as compared with its neighbour, very little ore comparatively having been extracted. They had as yet only driven 1500 ft. on the course of the vein; the length of the set being 5000 ft., or 3000 ft. more than the Sierra Buttes, the cropping of the lode may be seen about 3000 ft. from the eastern boundary.

The motion was then put and carried unanimously.—Mr. C. T. Green was re-elected director.

The CHAIRMAN, in acknowledging a vote of thanks to the board, expressed a hope that at the next meeting—if he should still occupy the chair—the report and accounts would be far more satisfactory than those submitted upon the present occasion.—A vote of thanks to the Chairman terminated the proceedings.

ENGLISH AND AUSTRALIAN COPPER COMPANY.

The ordinary general meeting of shareholders was held on Thursday, at the London Tavern.—Mr. R. A. ROOTH in the chair.

The notice convening the meeting was read by Mr. Charles B. Rogers (the secretary).

The report of the directors (which appeared in last week's Journal) was taken as read.

The CHAIRMAN desired, with the permission of the meeting, before moving the adoption of the report, to advert to one or two of its salient points, then it would be open to any of the gentlemen present to ask any question either as to the management of their business or the position and prospects of the company, when he might assure them he should be most happy to afford the meeting any explanation that might be required. Now, the accounts then submitted, and which embraced a period of 12 months, dating from July 1, 1871, to June 30, 1872, showed that the gross quantity of ore, regulus, &c., had been 5564 tons against 5441 tons in the previous year. The quantity of copper made at the Port Adelaide Smelting Works from July 1, 1871, to June 30, 1872, had been 1535 tons, against 1515 tons in the preceding 12 months. And the quantity of copper shipped from South Australia during the year ending June 30 had been 1535 tons against 1515 tons during the previous year. Thus, it would be seen the supplies of ore showed an increase over those of the previous 12 months. On turning to the profit and loss account for the year it would be observed that a balance at the credit was shown of 18,375*l.*, to which had to be added the balance at credit of profit and loss account on July 1, 1871, amounting to 6073*l.*, making together the sum of 24,448*l.* Out of that amount the board had declared the 21st dividend of 2*l.* 6*s.* 6*d.* per share, paid on Sept. 1, 1872, together with 10 per cent. added to the reserve fund, leaving a balance of 14,389*l.* 10*s.* 6*d.* of which the directors proposed to pay a dividend of 2*l.* 6*s.* 6*d.* per share, which, when the 10 per cent. on the paid-up capital of the company, besides an addition of 1750*l.* to the reserve fund, making the amount of profit earned equivalent to 11 per cent., and carrying forward nearly 5000*l.* He thought that such a result could not be considered other than a satisfactory account for the year. It would be in the recollection of the shareholders that when they had met in August last there had been every prospect of realising even a very much larger profit than was shown by the accounts before the meeting. But he felt sure it was not necessary for him to dwell at any length upon the causes that had operated against a fulfilment of those anticipations, inasmuch as the proprietors, being all men of business, could readily understand that a fall of 13*l.* per ton in the value of copper must have made a very material difference in the amount of profits realised. Without doubt, at the time of their meeting in August last, the board had been under the impression that at the present occasion a larger dividend than that now recommended would be declared; and, indeed, so well founded had been those anticipations, that if the company had been enabled to realise the copper they had at that date they would be now a larger amount at the credit of profit and loss account. As he had previously stated, the cause of the difference that existed between the anticipations entertained at their previous meeting and the actual results, as now ascertained, was to be attributed solely to the unexpected fall in the value of copper which had subsequently taken place. Now, not only were such causes entirely beyond the control of the directors, but the impossibility of calculating with any certainty upon their occurrence, or otherwise, would be more clearly seen when he quoted some of the prices that had ruled for copper during the past year, and when the almost unprecedented fluctuations that had occurred on the market became evident. In March last the company had sold copper at 94*l.* per ton, on the 13th at 95*l.* 10*s.* per ton, and on the 14th at 96*l.* per ton. Then, the next day had been sold realised 92*l.* per ton. On March 27 they had obtained 100*l.*; on April 2, 104*l.* 10*s.*; on the 27th, 103*l.* 10*s.*; on May 3, 105*l.*; on the 5th, 106*l.*; on the 17th, 106*l.*; on the 21st, 107*l.*; on May 30 they had sold at 112*l.* per ton, the highest price attained during the year. Again, on June 3, they had realised 112*l.*; on the 29th, 107*l.*; on the 8th, 109*l.*. Then had occurred a drop in the value. On Sept. 5 they had obtained only 97*l.*; on Oct. 31, 98*l.*; on Dec. 2, 98*l.*. Then another change had taken place, and in that month the price again rose to 94*l.* 10*s.*; on the 30th, to 96*l.*; and in the present month the company's ore was realising 94*l.* per ton. The figures just quoted would have shown the meeting that there had been very great fluctuations in the value of that metal during 1872; and, in corroboration of such statements, the Chairman proceeded to read some extracts from Messrs. Vivian's circular, bearing upon the position of the copper market during the same period. Now, he might mention that if they could keep copper at a steady price of (say) between 90*l.* and 100*l.* per ton it would prove far more advantageous to the company as smelters than those extraordinary prices. Looking back over the proceedings of the past year, he thought it was satisfactory to find that they had gradually fed the market, and yet had been enabled to keep their stocks low, consistent with the interests of the company. (Hear, hear.) There had been another matter which had also had a prejudicial effect upon the copper market during the past year: being of great importance, he would call attention to it. He alluded to the fact that the whole surplus stock of Chili—between 5000 and 6000 tons—had been sent over to this country. And then the Indian market, which usually required about 3000 tons from Australia annually, had not only dispensed with such a supply, but had returned to this country about 1200 tons. In addition to which Japan and Russia had exported a considerable quantity of copper to the English market. On the other hand, however, the demand for America has been larger than previously, and had thus, to some extent, counteracted this prejudicial effect. It gave him pleasure, however, to state that these circumstances were, to a great extent exceptional, and that he did not think there was any need for them to look for their recurrence during the present year. He had been informed that during the ensuing months India would open up again a fair market; it was then two years since she had taken copper from this country, her stock must, therefore, be necessarily poor. From the fact that she had reported all the copper on hand, Chili had no surplus to export, and in addition to which the price of the metal was falling off. Now, having regard to these various circumstances, he was of opinion that they opened this year under very favourable circumstances, although, speaking candidly, he should inform the shareholders the stocks in hand were very large. It must be remembered, on the other hand, that the consumption of this metal was gradually expanding, and, therefore, he felt to a great extent confident that there would be maintained during the ensuing year a good steady price of copper. It should not be overlooked that the extraordinary fluctuations that had occurred in 1872 had certain beneficial effects, inasmuch as it had in no inconsiderable degree hastened the exportation of the metal to the English market. The operations of the copper market, and assuming that the price of that metal maintained a steady figure, ranging from 90*l.* to 100*l.*, there was every prospect of the company making good profit during the current year. (Hear, hear, and cheers.) Then in regard to another matter of no less vital importance to the company. On Oct. 21 last the telegraph line was opened between Adelaide and Port Darwin, by which the management at home was placed in direct telegraphic communication within the space of 45 hours with their agents on the other side of the world. The advantages accruing to the company from this source were that they by this means could communicate with Australia at a very moderate expense, and thus prevent their agents buying ore in that country when there had occurred a drop here. The board, on the date of the opening of the line, and since, had availed themselves of this means of communication, so he felt assured that it would prove of very material benefit to the company. (Hear, hear.) It must be obvious to the proprietors that the importance of this vast improvement in their means of communicating with their agents could not be over-rated; in fact, it placed them in almost the same position as though the company's property were in Cornwall. In the next place, as to coal, while he was sorry to say it was at famine prices in this country, he was at a very moderate rate. Upon reliable information he might state that the prices now demanded for small coal in the colony was 5*s.* per ton; for seconds, 10*s.*; and for the best class, 13*s.* For the information of those who had but recently joined the company he might state that they had made a very judicious contract some time ago to have their works supplied with small coal at 2*s.* 6*d.* per ton. (Cheers.) With regard to the new works he desired to point out that neither in those now presented nor, probably, in the next accounts would the company feel the benefit to the full extent that must eventually result from the erecting and working of their new smelting establishment. There had been already made at a very moderate cost the finest metal ever turned out, and that amount was now on its way to this country. He might add that valuable contracts were being made in connection with those works, and, consequently, that the company would soon make much more copper than hitherto. This fact was regarded by the board as satisfactory and encouraging in the extreme. As he had previously stated, the gross quantity of ore received from various mines during the period under review amounted to 5564 tons, as compared with 5441 in the previous 12 months, but if they referred to the year preceding that time, it would be seen that for that period the quantity was only 3500 tons. Thus, in two years they had doubled the quantity of ore treated, and he confidently anticipated that a similar result would be attained during the current year. (Hear, hear.) He considered there was every probability, assuming that those contracts were carried out, that the company would obtain a full supply of ore for all their works. They were working at present with only one hand, as it were; when both were employed the prosperity of the company must necessarily be proportionately increased. They had hoped, but in this he was sorry to say they had been disappointed, that the Burra Burra Mine would have contributed very much more ore than they had received during the past year. The explanation of this was the non-completion up to the present time of the dressing machinery on that property. This would, however, be very shortly erected, and they had every reason to hope and believe that they would obtain very large supplies from that mine. Now, when that result was attained, and the company had obtained a supply of the ores for which their agents had been negotiating in Queensland, he (the Chairman) was of opinion that no smelting company could be in a better position than they would then occupy. They possessed excellent works on the Burra Burra property, at Adelaide, and now at their new works at Newcastle, which were situated actually at the pit's mouth. By that means they had the coal on the spot, and were enabled

to compete successfully with any other company. In conclusion, he could only repeat his previously expressed opinion that, on the whole, the past year might be fairly considered as a period of prosperity; and, while he confidently looked forward to realising good results during the current year, he anticipated that the success of 1873 would even exceed that of the previous 12 months. (Hear, hear.) He thought the trade had settled down into a sound, steady one, and if that were so the company were in a position to take advantage of it. He (the Chairman) then moved the adoption of the report.

Mr. LEE seconded the resolution. Mr. WRIGHT, possessing an acquaintance with the copper market, desired to support the opinion of the Chairman as to the prospect of good prices ruling and a steady market being maintained during the current year.

A prolonged discussion then ensued, in the course of which Messrs. LAMBERT, SURGEY, and others addressed the meeting. The points raised, however, were of minor importance, and received satisfactory explanations at the hands of the Chairman and other members of the board.

The resolution for the adoption of the report was then put and carried.

On the motion of the Chairman a dividend of 2*s.* 6*d.* per share, free of income tax, was then declared, payable on and after March 10.

Mr. A. COBBETT moved the re-election of Mr. R. A. ROOTH as a director of the company. This, on being seconded, was put and carried.

The CHAIRMAN next moved the re-election of Mr. Spencer Herapath, which was also seconded and carried.

Mr. J. VINCEY having been re-appointed as auditor, a vote of thanks was passed to the Chairman and directors, and the proceedings closed.

CAMP FLOYD SILVER MINING COMPANY.

The first annual general meeting of shareholders was held at the offices, Austinfriars, on Monday.—Mr. GEORGE BAITERS in the chair.

The report of the directors expressed great regret that the result of the workings has hitherto proved so contrary to all expectations, and that though a considerable body of ore has been discovered, it has proved to be of lower grade than the reports indicated. When the directors found in November that the mill was working at a loss, instructions were issued to shut it down, reduce the force, and economise in every way. The superintendent anticipates meeting with one of a richer grade as depth is attained. The mill and furnace are of the best construction, and are surrounded by other mines now working. They have requested Captain Wilder to ascertain if custom ore could not be obtained and worked profitably, and they are glad to learn that he thinks this suggestion can be carried out. Capt. Shaw, the vendor, has offered some compensation to place several other properties he owns in the district at the disposal of the company. These consist of seven mines, for which he is to receive payment entirely in shares, the only condition being that the company finds capital to develop them. This matter the board are entertaining, and have instructed Prof. Clayton to inspect and report upon them, as well as upon the three mines belonging to the company. As soon as this report arrives the directors will call a special meeting, to take the whole matter into consideration. In entering up the sales of bullion the board have had to estimate the amount received, owing to the non-arrival of the accounts from Salt Lake City. This, as will be seen from the balance-sheet, has caused an amount of 3143*l.* 7*s.* 8*d.* to be left standing to the credit of the company with Messrs. Wells, Fargo, and Co.; while the directors believe that when full particulars are to hand the whole amount will have to be written off, as will also the amount of 71*l.* 11*s.* 5*d.* standing to the debit of Capt. Shaw, when the voucher for its payment is produced.

The CHAIRMAN said that since the formation of the company a mill had been erected, and extensive explorations carried out at the mines. At the commencement they were sanguine enough to believe that ere now the company would have been in a regular dividend-paying condition; in that opinion they were warranted not only by the reports of their own agents, but by the disinterested reports of everyone who visited the mines, nearly all of whom backed their opinion by purchasing shares at high premiums. Amongst others two of their own directors—Mr. Bowe and Mr. Brydges Williams. The last-named gentleman, as director of the Emma Company, while in Utah visited Camp Floyd, and gave the directors an extraordinary written report (which could be seen by any shareholder), and also bought shares largely at a considerable premium. There could be no question as to the bona fides of the parties connected with the undertaking, who went into it with a clear and full conviction that it was a concern good enough for them to become interested in, and in which they could allow their friends to invest. Every exertion was made in the early part of the company's career to complete the works considered necessary for the return of the ore supposed to have been discovered; the company had decided to take over the mines from the vendor, provided the report of Mr. Henry Sewell and Capt. Nancarrow confirmed his statements, which they did, and the confirmation was placed in the hands of every shareholder before a share was taken; as soon, however, as the confirmation was received, and the whole of the shares were taken, the first object was to erect a mill. Capt. Shaw stated it could be erected for a certain sum of money; it was erected and started after some usual delays within about the amount computed. It was said a very large body of ore had been discovered, and a very large amount was discovered, as it had been returned as 3225 tons extracted, 2206 tons milled, the milling cost averaging \$114 per ton, the total cost of extracting, and charging the whole mine costs, exploration, &c., amounting to \$29 per ton, the whole having been charged not to capital, but to revenue. The entire cost of milling and mining was, therefore, about \$40 per ton; as the aggregate return had been \$75,496, the average return was \$34 per ton. As soon as it became known that the quality of the ore had so fallen off that it could not be milled to a profit, the directors telegraphed to Capt. Wilder to stop running the mill, and also all expense beyond that absolutely necessary. There were 30,000*l.* at the disposal of the directors, and after paying for the erection of the mill and carrying out the exploratory works there remained 1100*l.*, and over-drafts could not be drawn beyond 500*l.* They now possessed a very valuable mill, described as the best in the country, and a very large mining property, which up to the present had had but little done upon it in the way of development. An incline shaft had been sunk 180 ft., and the favourable feature was that they were sinking on a lode yielding good ore, so that there was every chance of discoveries being made. A very gloomy view of matters had been taken, simply from the fact that the reaction had been so sudden, and so great, from high hopes to despondency and almost despair, but he did not think they were justified in taking too gloomy a view either of the value of the property or the position of the company. The directors trusted that shareholders would not be led away to desert their property, but that they would do their very best to turn it round, in the hope and belief that it may be reinstated in as good a position as it had been hoped it would now be. (Hear, hear.) Capt. Shaw (the vendor) who was in the room, was the joint owner of several other mines in the neighbourhood, and offered them to this company upon such terms as in the event of their non-success he nor his partners would receive anything from them. It had been thought desirable to have the report of a thoroughly independent authority, and Prof. Clayton had been selected, it having been ascertained his report could be obtained for a reasonable sum; it was expected in a week or ten days, and the directors suggested that three or four of the principal shareholders should be appointed a committee to confer with the board upon the receipt of that report, and to advise generally as to the best course to pursue in the future. The board believed the company's mines to be valuable, and the mill property was likewise valuable; and other mines in the neighbourhood could be had upon terms involving no cost to the company. The directors believed if the company's property were energetically handled no shareholder need lose his money. They were fully alive to the importance of employing the mill upon customs ore, and something, no doubt, could be done in that direction as soon as the season opened, although there was every prospect it may be fully employed with ore from their own mines, for it could not be held as reasonable that a property which had yielded over 3000 tons of ore in 12 months, without any attempts whatever being made in the way of explorations, did not possess large deposits. He fully believed there were rich deposits yet to be discovered, and that the company's mines were valuable, and thoroughly deserving energetic management. (Hear, hear.) The directors had acted for the benefit of the company, and up to the present their services had been unpaid, and would be happy to continue to do the best for the interest of the undertaking. They had not the least desire to leave the company simply because difficulties threatened; on the contrary, they were here-to-day by their work, but if they had not the entire confidence of the shareholders were perfectly willing to resign. As far as he was personally concerned, never in the whole of his experience, which extended over a period of more than 30 years, had he been connected with any enterprise that had caused him so much pain and anxiety, nor one to which he had devoted so much time and anxious care as he had done to this company. (Hear, hear.) He was perfectly willing to give his time and attention if the shareholders so desired, believing, as he had already said, the property was a valuable one. (Hear, hear.) Having stated that he fully believed the company had no debts, and that it was perfectly solvent, he then

moved that the report and accounts be received and adopted.—Mr. F. COPE seconded the proposition.

Mr. F. BENNETT asked Capt. Shaw whether, in his experience of the limestone formation, the mineral following the same run as the rock did not indicate a lode?—Capt. SHAW said he had never had any experience of limestone formations—indeed, he had never had anything to do with silver mines before his connection with Camp Floyd. All the information he possessed was obtained from Capt. Wilder.

The CHAIRMAN said there could be no doubt that it was a well-defined lode with good walls.

Mr. BENNETT said the outcrop had been traced for 2260 ft., and although it had been developed for only 350 ft., a large amount of rich ore had been extracted. He could not see why the drift had been driven in barren ground. He had formed there was a large quantity of very hard rock, and it was impossible to know whether it was mineralised or not unless examined by an assayer; and as the rock, which no doubt exists in large quantities. He wanted to know why they had not selected a decomposed sulphuret of silver—had not been selected to work with the other rock?

Mr. SCOTT proposed, as an amendment to the reception and adoption of the report and accounts, that a committee be appointed to investigate the affairs of the company, and report thereon to a future meeting, to be held that day week, before Capt. Wilder's statements and assays were read and unveiled. He did not attach much value to Capt. Shaw's offer to give the company other mines, being offered upon the condition that the company find capital to work them. Mr. Hussey, he had apparently deceived the shareholders, in order that he might get rid of his shares; there was no doubt Mr. Hussey delayed sending the favourable telegram for the purpose of selling his shares in the meantime. He did not think there was a possibility of any connivance between the different gentlemen who visited the mine, but he did not think the directors had acted wisely in not telegraphing to stop the mill, and perhaps were justified in doing so, but they were not justified in waiting till the 6th of the present month before asking anyone to inspect the mine.

Mr. COPE explained that Mr. Hussey was not, nor ever had been, an agent of the company, but became a purchaser of the shares to the extent of 1000 shares, at the highest price. Mr. Hussey had the mine inspected by Mr. Henry Sewell, and his report was so favourable that he purchased a large interest. Mr. Hussey wrote to the board stating that, as his interest was so large in the mine, he thought it in its interest he should be appointed the assayer. Within the fortnight of that letter arriving heavy sales of shares were begun to the extent of 1000 shares, which the directors could not at all understand, and the price of the stock continued to fall, the directors being all the time unable to account for the real reason. Mr. Hussey being a large shareholder, and a responsible banker in Utah, the directors decided to telegraph to him as to whether there was anything wrong at the time—the result was known to them all.

Mr. SCOTT did not wish to throw any imputation whatever upon the honesty of the directors, and was bound to acknowledge their courtesy, especially in regard to Mr. Batters and Mr. Cope.

Mr. MACFARLANE recommended Mr. Scott not to push his amendment to the directors, because in reality it did not differ from that which the Chairman had offered, and had offered to continue in office, and to act with a committee appointed by shareholders to aid them in the present difficulties. The Chairman had offered that if the shareholders would not agree to the proposal of the board they were willing to resign; what possible object, therefore, was there for an amendment? Do not allow themselves to commence a prejudicial and fruitless strife, but unite and act harmoniously, with a view to develop the resources of their property. (Hear, hear.)

The CHAIRMAN stated most distinctly that before coming into that room he had resolved that if a committee of investigation were appointed they would resign it as a vote of want of confidence, and resign. He did not want to hold that out as a threat; on the contrary, he sympathised with the shareholders, but as the piece of the board he would most cheerfully propose that everything should be sifted to the bottom, a committee of shareholders should be appointed to confer with the board, and after the receipt of Professor Clayton's report, when more was known about the mines, convene a meeting of shareholders. Mr. Hussey, who was a shrewd speculator, would not have purchased anything like 2000 shares at a cost of 30,000*l.*, had he not believed he was going to sell at a higher price; subsequently his opinion changed, and he sold his shares, regardless of the consequences. The moment there was the slightest indication that the mine was falling off, Mr. Hussey took the earliest opportunity of selling his shares.

Mr. GUTIERREZ said that Mr. Hussey bought his shares at 16*l.* and sold them at 6*l.*—Mr. MACFARLANE said he bought some of Mr. Hussey's shares, but he were sold at double 6*l.*

The CHAIRMAN said that Mr. Brydges Williams, while at the mine, having expert with him, bought 250 shares. Mr. Bowe also believed the mine to be good, and Mr. Stuart Lane likewise telegraphed for the purchase of the shares. (The Chairman) still believed that their yet unexplored property was the best one, and required only to be properly developed to make it a great success. (Hear, hear.) But as to American mines, his name has been seen for the last time upon the list of any new company. There were valuable, very valuable, mines in Utah, California, and Nevada—mines of unparalleled richness—but no doubt gentlemen on the other side of the Atlantic knew their business better than those on this side, and was for Englishmen not to trust them any more.

Mr. SCOTT said he had been entrusted with 2000 or 3000 votes, the representatives of which were desirous that an investigation should take place, and the directors had not yet expressed any opinion as to the management of the mine.

Mr. MACFARLANE suggested that should be left to the committee to decide. Nor would it be judicious for the directors to give an opinion upon the management just now, but should be allowed to choose their own time and opportunity to make any change if necessary.

The CHAIRMAN said that the only paid agents at present on the mine were sent out from the office, Mr. Boufford, and Capt. Wilder, at a cost of 400*l.* per month. All other expenses were stopped immediately upon the collapse. The directors would give their immediate attention to get a better management of the mine.

Mr. SCOTT withdrew his amendment, provided the directors pledged themselves to adjourn the meeting.

Mr. COPE suggested the better plan would be to call another meeting.

Mr. SCOTT then consented to withdraw his amendment unconditionally.

The CHAIRMAN said the shareholders might depend upon if they would back to the meeting as Professor Clayton's report was received.—A SHAREHOLDER said that at the meeting in November he asked Capt. Shaw if he had sold any shares, and he replied in the negative, but such was not the case.

Capt. SHAW said that when he left this country for America he left "a call" a number of shares at par, and those holding the "call" had sold before he returned to England.

In reply to a question from Mr. Snell, the CHAIRMAN said that the mine completed within the terms of Captain Shaw's contract; 4000*l.* had been expended upon the furnaces.

Mr. SNELL said that Capt. Shaw by his agreement provided for the furnace a cost to the company not exceeding 12,000*l.* Had Capt. Shaw returned 1000*l.* Capt. SHAW said the contract price for the mill was 6000*l.*, but it was stated there was sufficient power for 10 more stamp-heads, which cost an additional 1000*l.* Before the contract was completed he telegraphed the fact to the directors.

Mr. MACFARLANE asked if Mr. Hussey was a promoter of Camp Floyd, and if he purchased his shares from Capt. Shaw?—The CHAIRMAN believed Mr. Hussey was a promoter, but he purchased his shares in the open market.

Mr. COPE said that with respect to the additional cost of the mill, the directors had a telegram from him telling them of the advisability of increasing the power; they had confidence in Capt. Shaw, and did not believe a single dollar had stuck to his legs.

The SECRETARY, in reply to further questions from Mr. SNELL, said the charges were principally in America.

Mr. SNELL said that Capt. Shaw undertook to pay all law expenses.

The SECRETARY added that the total expenses since Dec. 31 had amounted to about 250*l.* per month; on this side the expenses were merely those in connection with the office.

Mr. SNELL proposed an amendment that the report and accounts be passed, but that the meeting be adjourned, which, upon being seconded, was put, and only a hands were held up in its favour.

The motion adopting the report and accounts was then put and carried, with two dissentients.

Messrs. Scott, Allan (of Inman and Co.), and Mr. Bennett were appointed a committee to confer with the board. Mr. Good was appointed auditor. Upon the proposition of Mr. BENNETT, seconded by Mr. SCOTT, a vote of thanks was passed to the Chairman and directors for their services during the past year.

Upon the proposition of Mr. SNELL, seconded by Mr. ALLAN, a vote of thanks was passed to W. J. Lavington (the secretary) for his attention to the interests of the company.

A vote of thanks to the Chairman terminated the proceedings.

MARBELLA IRON ORE COMPANY.

An extraordinary general meeting of shareholders will be held on March 4.

The directors, in their report, have to admit a considerable measure of disappointment that the working results do not enable them to declare from profits the dividend of 15 per cent., which at the beginning of the year was expected. The company had hardly commenced operations when a most serious landslide occurred, covered up their workings, and a second similar landslide occurred in May. The consequence of these has been a great difficulty and expense in the extraction of ore, as may readily be understood from the statement that, while the output has been only 40,000 tons of ore, no less than 275,000 tons of dead stuff have been moved in the same period. In this single circumstance lies the difference between a small and a large profit on the work of the past year, and, to a certain extent, railway, and plant are all in thorough repair, and sufficient for a very large output, and as soon as the new galleries, now being driven, have exposed sufficient face of ore (and that is expected in the course of the present year) the production will be largely increased. This will enable the company to work out the advantages of the present position, and to get some advantage from the present advanced price of iron, in which case the directors feel confident that the profit for the current year will much exceed that of the past.

The company has sustained both loss and inconvenience through the operations of the vendors, whose personal liability the directors had considered an important addition to the securities held for the guarantee of dividends. The directors find it expedient for the company to possess three or four steamers, so as not to be entirely dependent on the open market, as there is often great difficulty in getting ships altogether suitable in size and fittings, and at reasonable freight.

The company has not sufficient working capital to enable it to pay for ships and out using its borrowing powers, but the directors think it more expedient to raise debentures to the extent of 50,000*l.* (in 10*l.* debentures), payable in seven years, with coupons attached, for half-yearly payment of interest at the rate of 8 per cent. per annum; the shareholders to have option of them at the rate of 10 per cent. for every five shares; part of these debentures to be redeemable at the option of the directors.

The directors believe that the profits of the ships will be sufficient to pay the interest, and redeem a considerable part of the capital annually. During the year 1907, 13*s.* 3*d.* has been added to capital account, consisting of additional shares, stock, outlay on galleries for developing the mine, law costs. A sum of 1500*l.* has been placed to a suspense account. This consists of outlay which, though not strictly chargeable to capital account, is so far exceptional in character that it ought not to be all thrown on the one year's revenue. The auditors propose to apportion

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Date.		Tons.	Amount received.	Average price obtained.
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First ditto 1870		2,025	26,708 10 0	15 3 9½
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First ditto 1871		2,600	32,598 0 0	12 11 5 ½
Second ditto		2,780	34,816 5 0	12 15 0 ½
First ditto 1872		2,529	30,867 0 0	13 19 10 ½
Second ditto		2,850	41,634 7 0	14 12 1 ¾
Total		17,850	£238,588 12 0	
General average on sales all through, 13½. 7s. 3¼d.				
Average price has been:—				
Date.		Tons.	Amount received.	Average price obtained.
First half of 1869 (5 months) ...		130	£ 393 0 0	£3 5 6
Second ditto		200	700 0 0	3 10 0
First ditto 1870 (contract)..		450	1,550 0 0	3 10 0
Second ditto ditto		450	1,345 10 0	2 19 3
First ditto 1871		600	1,900 0 0	3 10 0
Second ditto ditto		600	2,693 0 0	3 16 11½
First ditto 1872		800	3,268 5 0	3 13 2½
Second ditto ditto		1100	3,299 15 0	2 19 11½
Total		4160	£13,956 10 0	
General average on sales all through, 3s. 7s.				
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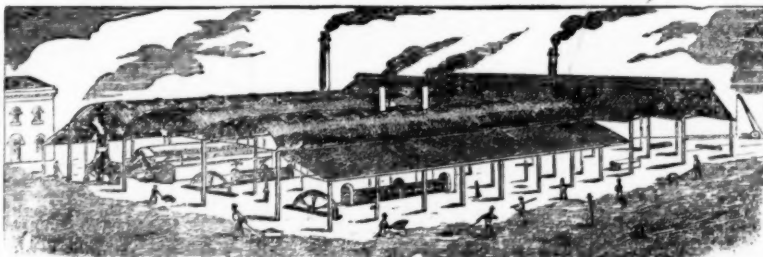
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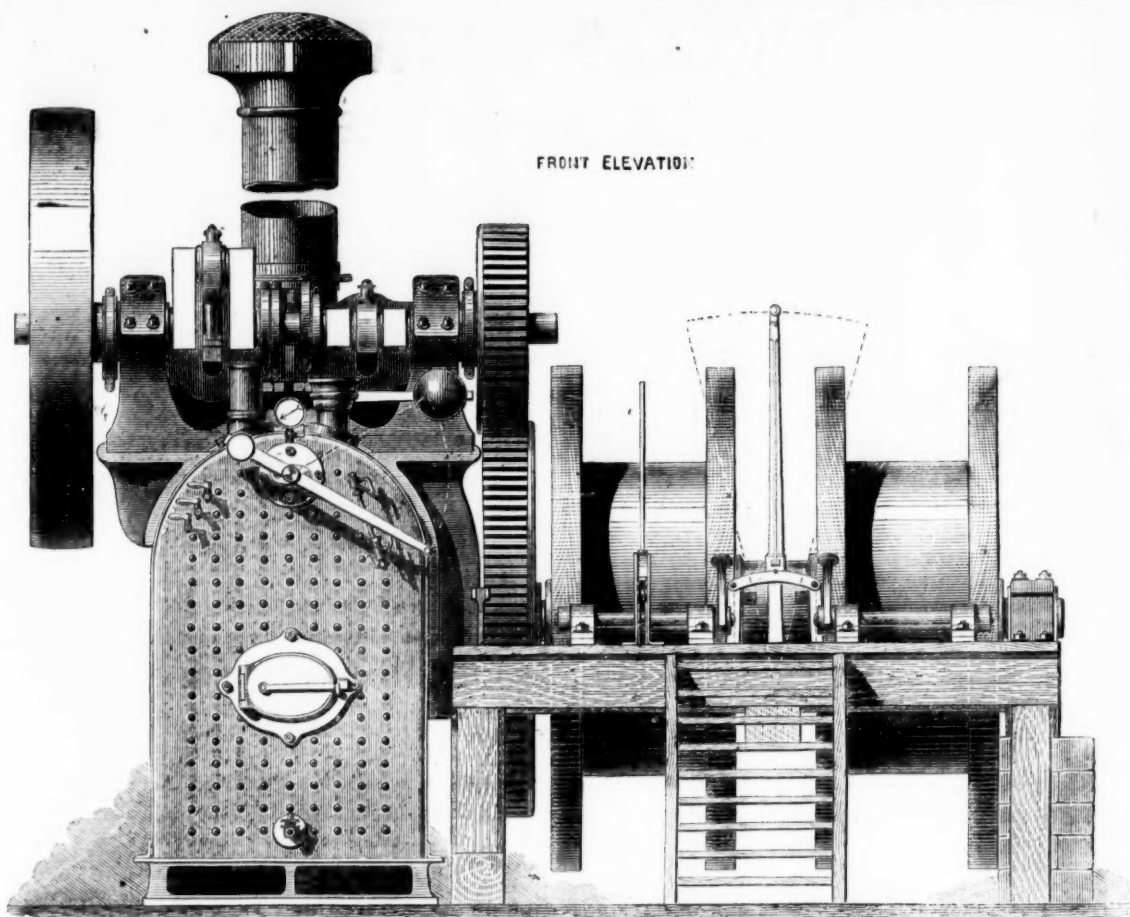
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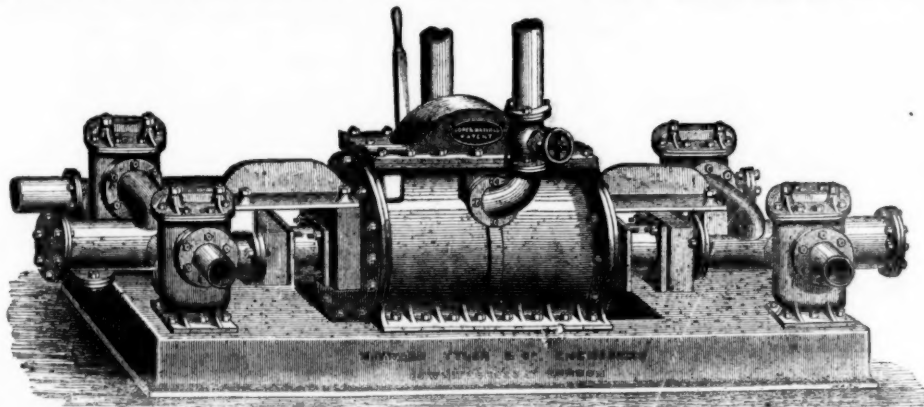
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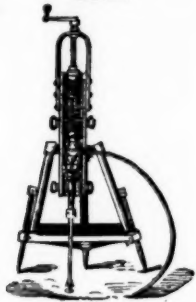
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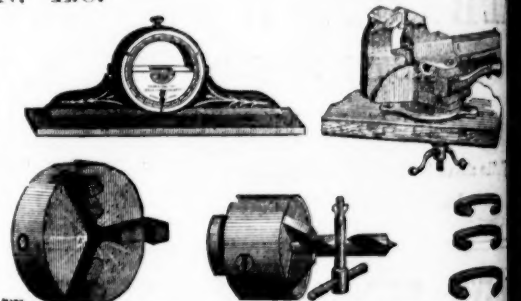
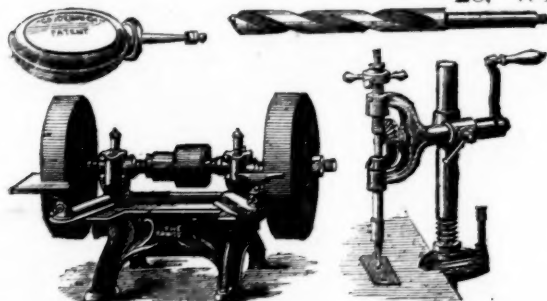
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